

299-W11-69 (A7311) Log Data Report

Borehole Information:

Borehole: 299-W11-69 (A7311)			Site: 216-T-14 Crib			
Coordinates (WA St Plane)		GWL¹ (ft): None		GWL Date: 06/20/05		
North (m)	East (m)	Drill Date	Ground Level Elevation (ft)	Total Depth (ft)	Type	
136834.817	566929.293	09/53	699.43	110.5	Cable	

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded Steel	3.5	8 5/8	8	5/16	3.5	110.5

Borehole Notes:

Casing diameter and casing stickup measurements were acquired by the logging engineer using a caliper and steel tape. Measurements were rounded to the nearest 1/16 in.

Logging Equipment Information:

Logging System: Gamma 1E		Type: SGLS (70%) SN: 34TP40587A
Effective Calibration Date: 03/04/05	Calibration Reference: DOE/EM-GJ854-2005	
Logging Procedure: MAC-HGLP 1.6.5, Rev. 0		

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat			
Date	06/20/05	06/20/05			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	110.5	107.5			
Finish Depth (ft)	3.5	95.5			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A ²	N/A			
Pre-Verification	AE075CAB	AE075CAB			
Start File	AE075000	AE075108			
Finish File	AE075107	AE075120			
Post-Verification	AE075CAA	AE075CAA			
Depth Return Error (in.)	- 1	0			

Log Run	1	2 Repeat			
Comments	No fine gain adjustment.	No fine gain adjustment.			

Logging Operation Notes:

Logging was conducted with a centralizer on the sonde. Logging data acquisition is referenced to the top of casing. A repeat section was collected in this borehole to evaluate system performance.

Analysis Notes:

Analyst:	Henwood	Date:	08/04/05	Reference:	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging system were performed before and after the day's data acquisition. The acceptance criteria were met.

A casing correction for 0.3125-in.-thick casing was applied to the log data.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G1EMar05.xls using efficiency functions and corrections for casing, water, and dead time as determined from annual calibrations. No corrections for dead time or water were necessary.

Log Plot Notes:

Separate log plots are provided for the man-made radionuclide (^{137}Cs) detected in the borehole, naturally occurring radionuclides (^{40}K , ^{238}U , ^{232}Th [KUT]), a combination of man-made, KUT, and dead time, and total gamma plotted with dead time. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, casing corrections, or water corrections.

Historical total gamma logs acquired in 1963 and 1976 and derived from Additon et al. (1978) were re-digitized and included for comparison with the current log data. A repeat log section is also included.

Results and Interpretations:

^{137}Cs is the man-made radionuclide detected in this borehole. ^{137}Cs is detected between the ground surface and 11 ft; the maximum concentration was measured at approximately 16 pCi/g at 5.5 ft. ^{137}Cs is also detected at a few sporadic locations throughout the borehole near the MDL of approximately 0.2 pCi/g.

Historical total gamma logs showed no elevated gamma activity attributable to man-made radionuclides in 1963 or 1976 and are consistent with the activity observed in the current SGLS total gamma profile. Relatively high activity indicated at approximately 98-110 ft is the result of elevated KUT.

The repeat section generally indicates good agreement of the naturally occurring KUT.

References:

Additon, M.K., K.R. Fecht, T.L. Jones, and G.V. Last, 1978. *Scintillation Probe Profiles From 200 East Area Crib Monitoring Wells*, RHO-LD-28, Rockwell Hanford Operations, Richland, Washington.

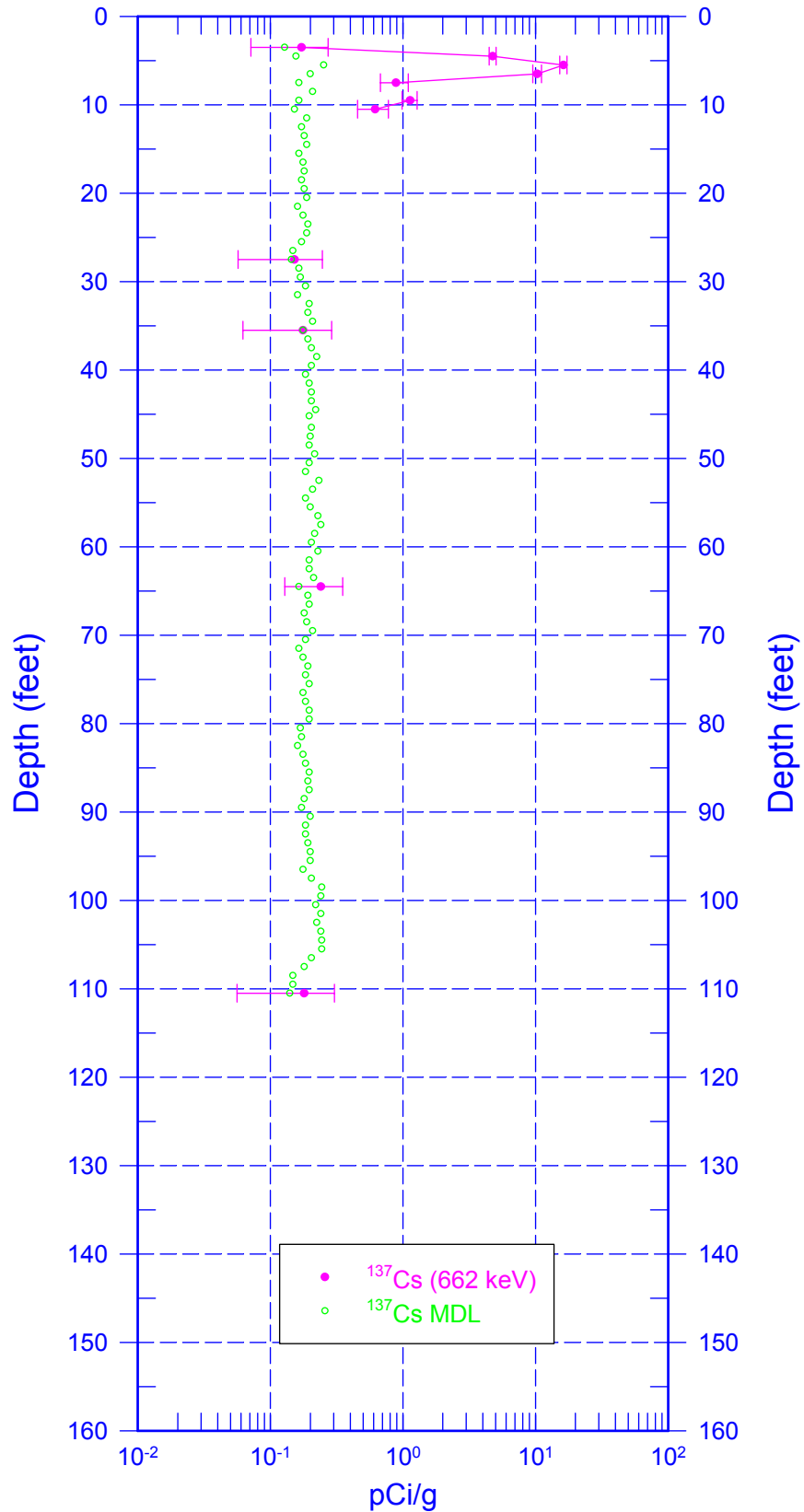
Chamness, M.A., and J.K. Merz, 1993. *Hanford Wells*, PNL-8800, Pacific Northwest Laboratory, Richland, Washington.

¹ GWL – groundwater level

² N/A – not applicable

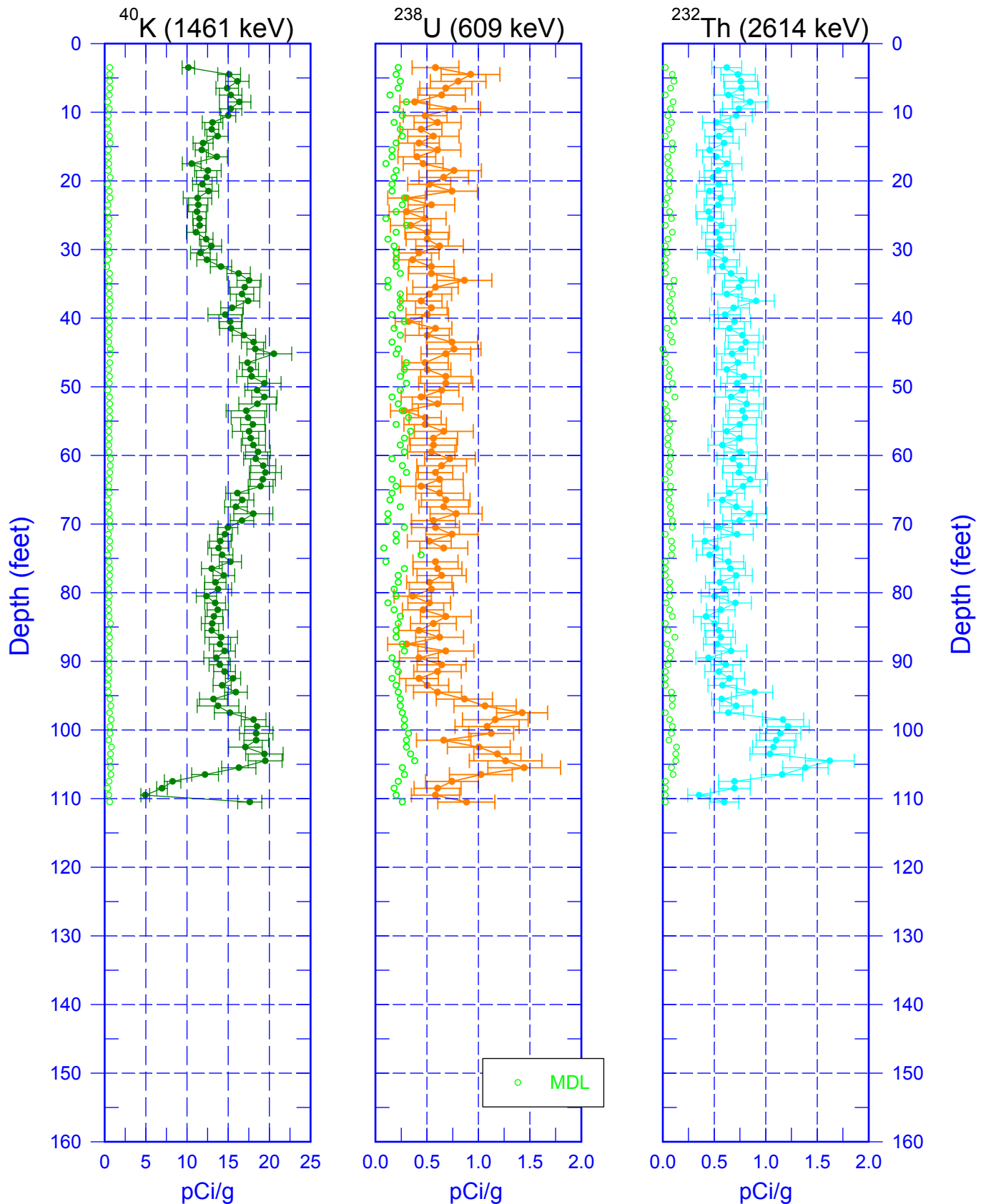
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Man-Made Radionuclides



299-W11-69 (A7311)

Natural Gamma Logs

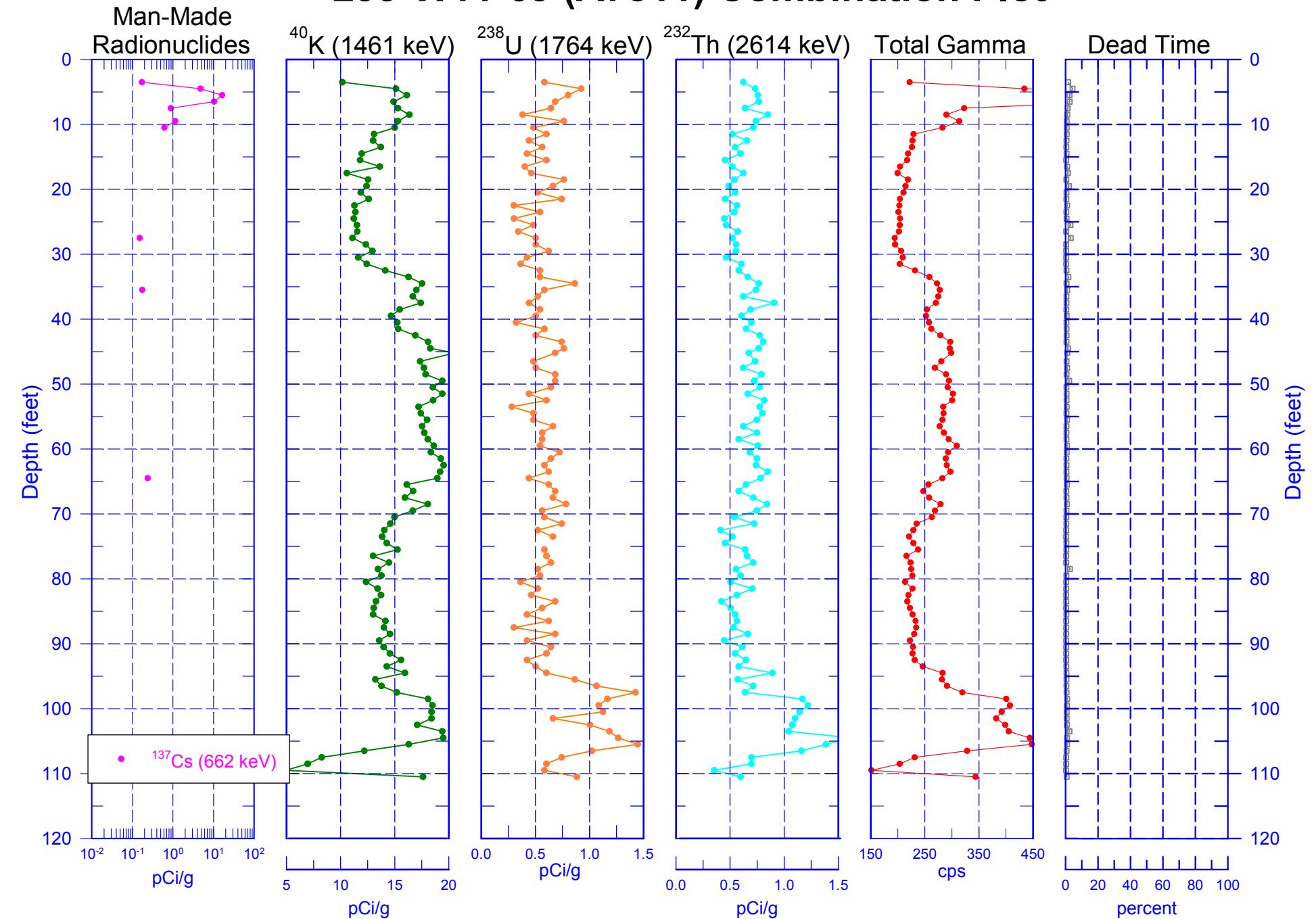


Zero Reference = Top of Casing

Depth scale: 1" = 20 ft

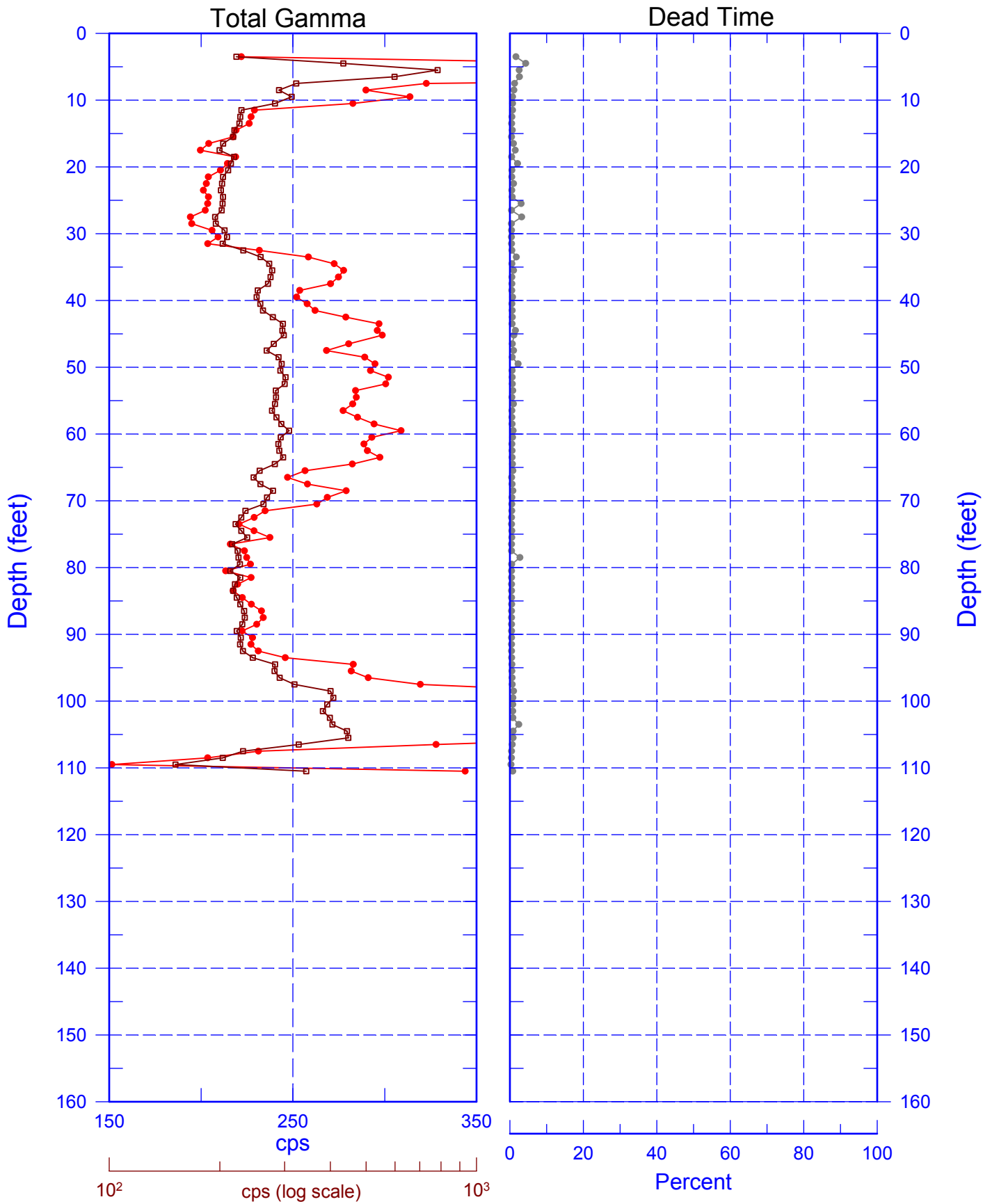
Last Log Date - 06/20/05

299-W11-69 (A7311) Combination Plot



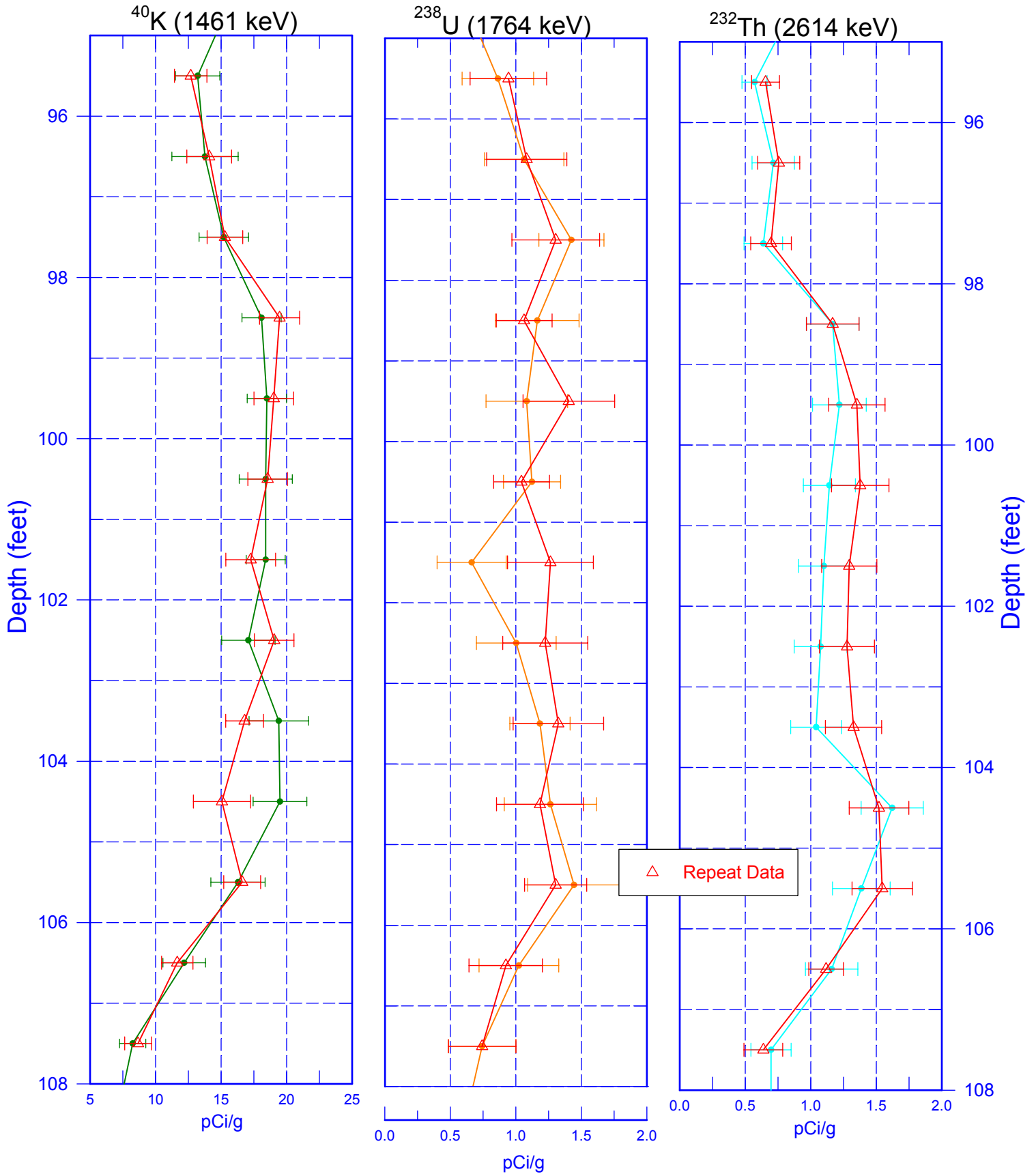
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Total Gamma & Dead Time



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Repeat Section of Natural Gamma Logs



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Comparison of Historical and SGLS Total Gamma

